



FIPS PUB 14-1

Supersedes FIPS PUB 14
1971 October 1

FEDERAL INFORMATION
PROCESSING STANDARDS PUBLICATION

1980 December 24

U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards



HOLLERITH
PUNCHED CARD CODE

CATEGORY: HARDWARE STANDARD
SUBCATEGORY: INTERCHANGE CODES AND MEDIA

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Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Federal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving the utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance and coordination of Government efforts in the development of guidelines and standards in these areas.

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Abstract

This publication provides a standard set of 256 hole patterns which represent the 128 characters of the Federal Standard Code for Information Interchange (ASCII) FIPS 1-1, in 12-row, 80-column, rectangular hole, "Hollerith" punched cards, or the subsets of ASCII as specified in FIPS 15, Subsets of the Standard Code for Information Interchange, or supersets of ASCII as specified in FIPS 35, Code Extension Techniques in 7 or 8 Bits. It adopts all 256 hole patterns given in the American National Standard X3.26-1980, Hollerith Punched Card Code. The 128 hole patterns for ASCII are the same as in the original FIPS 14. Nine related standards are listed.

KEY WORDS: American National Standard Code for Information Interchange; ASCII; card punch; card reader; data communications; data interchange; data processing; electric accounting machine; EAM cards; Federal Information Processing Standard; Hollerith punched card code; Hollerith punched cards; information interchange; information processing; punched cards; standard.

Nat.Bur.Stand. (U.S.), Fed.Info.Process.Stand.Publ.(FIPS PUB) 14-1, 4 pages.
(1981)
CODEN:FIPPAT

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**Federal Information
Processing Standards Publication 14-1**
1980 DECEMBER 24
ANNOUNCING THE STANDARD FOR
HOLLERITH PUNCHED CARD CODE



Federal Information Processing Standards Publications are issued by the National Bureau of Standards pursuant to section 111(f)(2) of the Federal Property and Administrative Services Act of 1949, as amended, Public Law 89-306 (79 Stat. 1127), Executive Order 11717 (38 FR 12515, dated May 11, 1973) and Part 6 of Title 15 Code of Federal Regulations (CFR).

1. Name of Standard. Hollerith Punched Card Code (FIPS 14-1).
2. Category of Standard. Hardware Standard, Interchange Codes and Media.
3. Explanation. This standard specifies the representation of the Federal Standard Code for Information Interchange (FIPS 1-1), in 82 mm (5-1/4 in) wide, 12-row, 80-column, rectangular hole, "Hollerith" punched cards used in Federal information processing systems and associated equipment. The original FIPS PUB 14, dated 1971 October 1, adopted only half of the 256 available hole patterns, corresponding to the 128 characters of FIPS-1 (ASCII). This revision of FIPS PUB 14, designated as FIPS PUB 14-1, adopts all 256 hole patterns of American National Standard X3.26-1980, Hollerith Punched Card Code, in accordance with FIPS 35, Code Extension Techniques in 7 or 8 Bits. Most Federal Government applications will not require any of the 128 additional hole patterns, but when any of them are needed, they should be used in accordance with this standard.

Graphic substitutions using special symbols to represent "Logical OR" and "Logical NOT" were permitted by FIPS 1 and FIPS 14 in place of "Exclamation Point" and "Circumflex" and the symbol for "Vertical Line" was shown as a broken vertical line. These graphic substitutions are not permitted in FIPS 1-1 nor in FIPS 14-1, and "Vertical Line" is shown as a solid vertical line.

4. Approving Authority. Secretary of Commerce.
5. Maintenance Agency. U.S. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).
6. Cross Index. American National Standard X3.26-1980, Hollerith Punched Card Code.
7. Related Documents.
 - a. FIPS PUB 1-1, Code for Information Interchange.
 - b. FIPS PUB 13, Rectangular Holes in Twelve-Row Punched Cards.
 - c. FIPS PUB 15, Subsets of the Standard Code for Information Interchange.
 - d. FIPS PUB 35, Code Extension Techniques in 7 or 8 Bits.
 - e. American National Standard X3.11-1969 (Revised), Specifications for General Purpose Paper Cards for Information Processing.
 - f. American National Standard X3.21-1967, Rectangular Holes in Twelve-Row Punched Cards.
 - g. International Standard ISO 6586-1980, Information Processing--

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Representation of 7-Bit and 8-Bit Coded Character Sets on Punched Cards (formerly ISO 1679-1973 for 7 bits and ISO 2021-1975 for 8 bits).

h. International Standard ISO 1681-1973, Information Processing--Unpunched Paper Cards--Specification.

i. International Standard ISO 1682-1973, Information Processing--80 Column Punched Paper Cards--Dimensions and Location of Rectangular Punched Holes.

8. Applicability. Generally applicable to the representation of character coded information in 82.55mm (3-1/4 in) wide, 12-row, 80-column, rectangular hole, "Hollerith" punched cards used with data processing, communications, and related equipments. This standard coding does not apply to other types of punched cards, such as those with round holes. It is not applicable to "edge-punched" cards, whose code holes resemble those used in perforated tape. It is applicable when subsets of the standard code are used as specified in FIPS PUB 15, Subsets of the Standard Code for Information Interchange, and it is applicable when 8-bit character-coded data is used as specified in FIPS PUB 35, Code Extension Techniques in 7 or 8 Bits.

9. Implementation Schedule. All applicable equipment ordered on or after the effective date of this FIPS PUB must be in accordance with this standard or a subset thereof as specified by FIPS 15 unless a waiver has been obtained in accordance with the procedure described below. Exceptions to this standard are made in the following cases:

a. For equipment installed or on order prior to the effective date of this FIPS PUB.

b. Where procurement actions are into the solicitation phase (i.e., Request for Proposals or Invitation for Bids has been issued) on the effective date of this FIPS PUB.

c. Where 48- or 64-character punched card equipment is leased to replace like equipment and where such action satisfies systems requirements and results in reduced costs to the Government (e.g., punched card equipment obtained through third-party leasing agreements or Government-wide procurement contracts).

10. Specifications. This Federal standard adopts in whole American National Standard X3.26-1980, Hollerith Punched Card Code.

11. Qualifications. Variations such as character substitutions or additional hole patterns will result in a code which does not conform to the standard. Such variations, if required by agencies having special requirements, must be coordinated with the National Bureau of Standards and waived by the agency head prior to final agency procurement authorization. This Federal standard includes the 128 additional hole patterns contained in Columns 8 through 15 of Code Table 2.1 of the American National Standard X3.26-1980.

12. Special Information. The size, location, and tolerances of rectangular holes in 12-row, 80-column, 82.55mm (3-1/4 in) wide punched cards are specified in FIPS 13.

13. Waivers. Heads of agencies may waive the provisions of the implementation schedule. Proposed waivers relating to the procurement of punched card equipment will be coordinated in advance with the National Bureau of Standards. Letters should be addressed to the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, DC 20234. They should describe the nature of and reasons for the waiver being sought.

Sixty days should be allowed for review and response by the National Bureau of Standards. The waiver is not to be made until a reply from the National Bureau of Standards is received; however, the final decision for granting the waiver is a responsibility of the agency head.